# SAT Report

PMN Number: **L-12-0007**
SAT Date: **10/18/2011**
Print Date: **11/26/2014**

**Related cases:** [redacted]

**Concern levels:**

| Type of Concern: | Health | Eco | Comments |
|---|---|---|---|
| Level of Concern: | 1-2 | 2 | |

| Persistence | Bioaccum | Toxicity | Comments |
|---|---|---|---|
| 1 | 1 | 1<br>Awaiting Human Health Entry<br>Awaiting Human Health Entry<br>Awaiting Human Health Entry | |

**Exposure Based Review:**

**Health:** No
**Ecotox:** No

**Routes of exposure:**

**Health:** Dermal Drinking Water Inhalation
**Ecotox:** All releases to water
**Fate:** ;

**Keywords:**

**Keywords:**

**Summary of Assessment:**

**Fate:**

**Fate Summary:** L-12-0007

FATE:
Solid with MP = 37-41 C (M)
log Kow = 4.32 (E)
S = 11.2 mg/L at 25 C (E)

VP = 4.7E-2 torr at 25 C (NOMO5)
BP = 246 C (M)
H = 9.96E-4 (E)
log Koc = 2.78 (E)
log Fish BCF = 2.52 (E)
log Fish BAF = 2.86 (E)
POTW removal (%) = 58 via sorption
Time for complete ultimate aerobic biodeg = wk-mo
Sorption to soils/sediments = strong
Volatilization half-life from a standard river = 3 hrs
Volatilization half-life from a standard lake = 7 da
Atmospheric Oxidation Half-life = 60 hr via OH radical
PBT Potential: P1B1
*CEB FATE: Migration to ground water = slow

**Health:**

**Health Summary:** Absorption is nil through the skin as the neat material, poor through the skin when in solution, and poor through the lungs and GI tract based on physical/chemical properties. There is concern for mutagenicity, neurotoxicity, and liver effects for the aromatic bromines and uncertain concern for developmental toxicity based on small benzene compounds. Low moderate concern.

**Ecotox:**

| Test Organism | Test Type | Test End Point | Predicted | Measured | Comments |
|---|---|---|---|---|---|
| **fish** | **96-h** | **LC50** | 1.8 | | |
| **daphnid** | **48-h** | **LC50** | 1.4 | | |
| **green algal** | **96-h** | **EC50** | 1.8 | | |
| **fish** | **_** | **chronic value** | 0.21 | | |
| **daphnid** | **_** | **chronic value** | 0.33 | | |
| **algal** | **_** | **chronic value** | 1.0 | | |
| **Sewage Sludge** | **3-h** | **EC50** | **_** | | |
| **Sewage Sludge** | **_** | **Chronic Value** | **_** | | |

**Ecotox Values Comments:**

| Factors | Values | Comments |
|---|---|---|
| Assessment Factor | 10 | |
| Concentration of Concern (ppb) | 21 | |
| SARs | neutral organic chemicals | |
| | | |

| | | |
|---|---|---|
| SAR Class | brominated hydrocarbon | new chemicals category: neutral organics |
| Ecotox Category | | |

**Ecotox Factors Comments:**

**SAT Chair:** Becky Jones

# Focus Report

New Chemicals Program

PMN Number: **L-12-0007**

| | | | |
|---|---|---|---|
| Focus Date: | 10/23/2011 11:00:00 PM | Report Status: | Completed |
| Consolidated Set: | | | |
| Focus Chair: | Rose Allison | Contractor: | Stephen Wieroniey |

## I. Notice Information

| | | | |
|---|---|---|---|
| Submitter: | Johnson Matthey Inc. | CAS Number: | 1611-92-3 |
| Chemical Name: | Benzene, 1,3-dibromo-5-methyl- | | |
| Use: | Tracer chemical to measure flow in deep oil-bearing strata. Related Cases Submitted Together: L-12-7, L-12-10, L-12-11. P2 Claim: Petroleum producers traditionally have used radionuclide tracers to measure the flow rate in oil-bearing strata and to adjust their pumping rate to achieve desirable flow characteristics. The LVE substance is a substitute for these radionuclides. Its use will result in a reduced handling of radioactive materials by both contractors and oil production employees, as well as lower release of radioactive materials into the environment. | | |
| Other Uses: | [redacted] | | |
| PV-Max: | 1,000 Kg/yr | Binding Option: | Yes |
| Manufacture: | | Import: | X |

## II. SAT Results

(1) **Health Rating:** 1-2 **Eco Rating:** 2 **Comments:** ;

**Occupational:** 2-3A **Non-Occupational:** **Environmental:** 2

(1) **PBT:** 1 1 1 **Comments:**

## III. OTHER FACTORS

**Categories:**

Health Chemical Category: Ecotox Category: neutral organic chemicals

**Related Cases/Regulatory History:**

Health related Cases:

Ecotox Related Cases: Analogs: [redacted].

Regulatory History: [redacted]-SR MID-COURSE DISP DROP
-WITHDRAWN/FACE 5E
-SHORT QUESTION DISPO DROP

**MSDS/Label Information:**

| | | | |
|---|---|---|---|
| MSDS: | Yes | Label: | No |
| General Equipment: | impervious gloves / safety glasses / protective work clothing / properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. | | |
| Respirator: | use respirator when high concentrations are present | | |
| Health Effects: | causes skin irritation / causes serious eye irritation / may cause respiratory irritation | | |
| LVEPPE: | impervious gloves / goggles / Tyvek suit | | |

**Exposure Based Information:**

| | | | |
|---|---|---|---|
| Exposure Based Review: | N | Exposure Based Review (Health): | N |
| Exposure Based Review (Eco): | N | Exposure Based (Occupational): | No |
| Exposure Based Review (Non Occupatuional): | | Exposure Based (Environmental): | |

## IV. Summary of SAT Assessment

## Fate:

**Fate Summary:**

L-12-0007
FATE:
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## Health:

**Health Summary:** Absorption is nil through the skin as the neat material, poor through the skin when in solution, and poor through the lungs and GI tract based on physical/chemical properties. There is concern for mutagenicity, neurotoxicity, and liver effects for the aromatic bromines and uncertain concern for developmental toxicity based on small benzene compounds. Low moderate concern.

## Ecotox:

**Ecotox Values:**

| | |
|---|---|
| Fish 96-h LC50: | 1.8(P) |
| Daphnid 48-h LC50: | 1.4(P) |
| Green algal 96-h EC50: | 1.8(P) |
| Fish Chronic Value: | 0.21(P) |
| Daphnid ChV: | 0.33(P) |
| Algal ChV: | 1.0(P) |

**Ecotox values comments:** Predictions are based on SARs for neutral organic chemicals; SAR chemical class = brominated hydrocarbon; MW 250; log Kow = 4.32 (EPI); solid with mp = 41 C (M); pH7; effective concentrations based on 100% active ingredients and mean measured concentrations; hardness <150.0 mg/L as CaCO3; and TOC <2.0 mg/L;

**Ecotox Factors:**

| | |
|---|---|
| Assessment Factor: | 10 |
| Concern Concentration: | 21 |

## V. Summary of Exposures/Releases

Engineering Summary: L-12-0007

| Exposures/Releases | Release | Release | Release |
|---|---|---|---|
| **Scenario** | **Processing: Tracer Chemical Formulation** | **Processing: Tracer Chemical Formulation** | **Processing: Tracer Chemical Formulation** |
| **Sites** | **1** | **1** | **1** |
| **Media** | **Water or Air or Incineration or Landfill** | **Water or Incineration or Landfill** | **Water or Incineration or Landfill** |
| Descriptor A | Output 2 | Output 2 | Conservative |
| Quantity A (kg/site/day) | 3.1E-1 | 6.2E-1 | 6.2E-1 |
| Frequency A (day/year) | 16 | 16 | 16 |
| Descriptor B | | | |
| Quantity B (kg/site/day) | | | |
| Frequency B (day/year) | | | |
| From | Unloading Solid Raw Material from Transport Containers | Cleaning Solid/ Powder Residuals from Containers Used to Transport the Raw Material | Equipment Cleaning Losses of Liquids from a Single, Small Vessel |
| Workers | | | |
| Exposure Type | | | |

| Engineering Summary: Exposures/Releases | Release | Release | Release |
|---|---|---|---|
| **Scenario** | **Processing: Tracer Chemical Formulation** | **Processing: Tracer Chemical Formulation** | **Use: Injection of Tracer Chemical into Oil-Bearing Strata** |
| **Sites** | **1** | **1** | **1** |
| **Media** | **Air** | **Air** | **Air** |
| Descriptor A | Output 2 | Typical | Typical |
| Quantity A (kg/site/day) | 3.9E-3 | 4.0E-5 | 3.2E-5 |
| Frequency A (day/year) | 16 | 16 | 50 |
| Descriptor B | | Worst Case | Worst Case |
| Quantity B (kg/site/day) | | 4.0E-5 | 3.2E-5 |
| Frequency B (day/year) | | 16 | 50 |
| From | Equipment Cleaning Losses of Liquids from a Single, Small Vessel | Loading Liquid Product into Containers | Unloading Liquid Product from Containers |
| Workers | | | |
| Exposure Type | | | |

## V. Summary of Exposures/Releases

Engineering Summary: L-12-0007

| Exposures/Releases | Release | Release | Exposure |
|---|---|---|---|
| **Scenario** | **Use: Injection of Tracer Chemical into Oil-Bearing Strata** | **Use: Injection of Tracer Chemical into Oil-Bearing Strata** | **Processing: Tracer Chemical Formulation** |
| **Sites** | **1** | **1** | **1** |
| **Media** | **Water or Incineration or Landfill** | **Incineration** | **Dermal** |
| Descriptor A | High End | Output 2 | High End |
| Quantity A (kg/site/day) | 1.2E-1 | 2.0E+1 | 3.0E+3 |
| Frequency A (day/year) | 50 | 50 | 16 |
| Descriptor B | | | |
| Quantity B (kg/site/day) | | | |
| Frequency B (day/year) | | | |
| From | Cleaning Liquid Residuals from Containers Used to Transport the Product | Oil Production | Unloading Solid Raw Material from Transport Containers |
| Workers | | | 3 |
| Exposure Type | | | Solid |

| Engineering Summary: Exposures/Releases | Exposure | Exposure | Exposure |
|---|---|---|---|
| **Scenario** | **Processing: Tracer Chemical Formulation** | **Processing: Tracer Chemical Formulation** | **Processing: Tracer Chemical Formulation** |
| **Sites** | **1** | **1** | **1** |
| **Media** | **Inhalation** | **Dermal** | **Inhalation** |
| Descriptor A | Upper Bound | High End | Worst Case |
| Quantity A (kg/site/day) | 1.5E+2 | 7.1E+2 | 1.9E-1 |
| Frequency A (day/year) | 16 | 16 | 16 |
| Descriptor B | | | Typical |
| Quantity B (kg/site/day) | | | 6.3E-3 |
| Frequency B (day/year) | | | 16 |
| From | Unloading Solid Raw Material from Transport Containers | Loading Liquid Product into Containers | Loading Liquid Product into Containers |
| Workers | 3 | 3 | 3 |
| Exposure Type | Particulate | Liquid | Vapor |

## V. Summary of Exposures/Releases

Engineering Summary: L-12-0007

| Exposures/Releases | Exposure | Exposure | |
|---|---|---|---|
| **Scenario** | **Use: Injection of Tracer Chemical into Oil-Bearing Strata** | **Use: Injection of Tracer Chemical into Oil-Bearing Strata** | |
| **Sites** | **1** | **1** | |
| **Media** | **Dermal** | **Inhalation** | |
| Descriptor A | High End | Worst Case | |
| Quantity A (kg/site/day) | 7.1E+2 | 4.5E-1 | |
| Frequency A (day/year) | 50 | 50 | |
| Descriptor B | | Typical | |
| Quantity B (kg/site/day) | | 1.5E-2 | |
| Frequency B (day/year) | | 50 | |
| From | Unloading Liquid Product from Containers | Unloading Liquid Product from Containers | |
| Workers | | | |
| Exposure Type | Liquid | Vapor | |

## VI. Focus Decision and Rationale

**Regulatory Actions**

Regulatory Decision: LVE Conditional Grant Decision Date: 10/23/2011
Type of Decision:

Rationale: L-12-0007 was given a conditional grant. Human health concerns were low-moderate for dermal, drinking water and inhalation exposure. Potential risks to workers were addressed by adequate dermal PPE. There were potential health concerns based on aromatic bromine and benzene. However, the submitter must amend the notice and MSDS to include a NIOSH-certified combination respirator with an APF of 10. Ecotoxicity concerns were moderate. Potential risks to the environment were low due to less than 20 days of exceedance of the COC. This LVE was bound at 1,000 kg/year.

COC: Chronic – 21 ppb; Acute – 280 ppb.
Summary of Exposures and Releases:

Processing:
1 site, 16 days/year, 3 workers
Inhalation 1: Part: 1.5E+2 mg/day
Inhalation 2: Part: Typical: 6.3E-3 mg/day; Worst Case: 1.9E-1 mg/day
Dermal 1: 3.0E+3 mg/day (Solid 98%)
Dermal 2: 7.1E+2 mg/day (Liquid 40%)

Releases to Water 1: 3.1E-1 kg/site-day over 16 days/yr
Or Air or Incineration or Landfill
Releases to Water 2: 6.2E-1 kg/site-day over 16 days/yr
Or Incineration or Landfill
Releases to Water 3: 6.2E-1 kg/site-day over 16 days/yr
Or Incineration or Landfill
Releases to Air 1: 3.9E-3 kg/site-day over 16 days/yr
Releases to Air 2: Typical: 4.0E-5 kg/site-day over 16 days/yr; Worst Case: 4.0E-5 kg/site-day over 16 days/yr

Fate Releases to Water (58% Removal):
SWC: 120.33 ppb
DW: LADD: 4.40E-06 mg/kg/day; ADR: 5.80E-03 mg/kg/day
FI: LADD: 6.21E-06 mg/kg/day; ADR: 7.61E-03 mg/kg/day
>COC (21 ppb): 6/16 release days

Use:
1 site, 50 days/year, 3 workers
Inhalation: Typical: 1.5E-2 mg/day; Worst Case: 4.5E-1 mg/day
Dermal: 7.1E+2 mg/day (Liquid 40%)

Releases to Water: 1.2E-1 kg/site-day over 50 days/yr
Or Incineration or Landfill
Releases to Air: Typical: 3.2E-5 kg/site-day over 50 days/yr; Worst Case: 3.2E-5 kg/site-day over 50 days/yr
Releases via Incineration: 2.0E+1 kg/site-day over 50 days/yr

Fate Releases to Water (58% Removal):
SWC: 20.00 ppb
DW: LADD: 2.57E-06 mg/kg/day; ADR: 9.40E-04 mg/kg/day
FI: LADD: 3.63E-06 mg/kg/day; ADR: 1.42E-03 mg/kg/day
>COC (21 ppb): 9/50 release days

Fate Release to Air:
Stack Air: 2.73E-04 mg/kg/day

P2 Rec Comments:

**Testing:**

**Final Recommended:**

Health:
Eco:
Fate:
Other: